

Phytotoxicity Evaluation of Selective Materials on Fairway Height Creeping Bentgrass

J. A. Borger and T. L. Harpster¹

Introduction

This study was conducted on a mature stand of fairway height 'Penneagle II' creeping bentgrass (*Agrostis stolonifera*) and annual bluegrass (*Poa annua*) at the Valentine Turfgrass Research Center, Penn State University, University Park, PA. The objective of the study was to determine if selected materials would injure the creeping bentgrass under simulated golf course fairway conditions.

Methods and Materials

This study was a randomized complete block design with three replications. Treatments were applied on September 9 (SEPT), and 30, 2014 (3 WAT) using a three foot CO₂ powered boom sprayer (Figure 1) calibrated to deliver 40 gpa using one, flat fan, TP9508EVS nozzle at 50 psi. The test site was mowed at 0.50 inches three times a week with a reel mower and the clippings were collected. Turfgrass was irrigated on an as needed basis to prevent moisture stress.

At the initiation of the trial, the test site (Figure 2) consisted of approximately 60 percent creeping bentgrass and 40 percent annual bluegrass. All plots were rated by recording the population of creeping bentgrass prior to the application of any treatment, on a plot by plot basis. The rating was conducted by way of visual interpretation. This was repeated May 1, 2015 and a percent reduction of the population was produced (Figure 3).

Results and Discussion

Creeping bentgrass phytotoxicity were rated seven times during the study (Table 1) It appears that all treated turfgrass, except the tank of A15118B, A18575F, and INDUCE at the lowest rate caused unacceptable (greater than 3) phytotoxicity on the ratings taken following the second application of materials. More research is needed to confirm this and also evaluate other options to reduce the phytotoxicity.

The creeping bentgrass population was rated on May 1, 2015 (Table 2). All treated turfgrass had a significant reduction in the creeping bentgrass population except for turfgrass treated with A15118B applied at 4.80 fl oz/A combined with A18575F applied at 5.13 fl oz/A and INDUCE. These compounds appear to injure and eliminate creeping bentgrass. By the end of the study, annual bluegrass populations filled in where there was heavy injury to the creeping bentgrass (Figure 3). Application rates and timing need more investigation to confirm this statement.

¹ Senior Instructor, Research and Technician III Respectively, Department of Plant Sciences, Penn State University, University Park, Pa, 16802

Table 1. Evaluations of creeping bentgrass phytotoxicity following applications on September 9 and 30, 2014 where 0 = no phytotoxicity, 3 = acceptable, and 10 = dead turf in 2014.

Treatment	AI GM/L	Rate FL OZA	TIMING	(-----CBG PHYTO-----)						
				9/11	9/15	9/18	9/23	9/30	10/7	10/16
A15118B INDUCE	100 EC	4.80 0.25 % v/v	SEPT/3 WAT	2.0	2.0	4.0	7.0	6.0	7.0	8.7
A15118B INDUCE	100 EC	9.60 0.25 % v/v	SEPT/3 WAT	2.3	2.7	5.3	8.3	7.3	8.3	10.0
A15118B A18575F INDUCE	100 EC 200 EC	4.80 5.13 0.25 % v/v	SEPT/3 WAT	0.0	0.7	2.0	2.0	1.3	1.3	5.0
UNTREATED CHECK				0.0	0.0	0.0	0.0	0.0	0.0	0.0
A15118B A18575F INDUCE	100 EC 200 EC	9.60 5.13 0.25 % v/v	SEPT/3 WAT	1.3	1.3	4.0	6.0	5.7	6.0	9.3
A13617V INDUCE	50 EC	9.60 0.25 % v/v	SEPT/3 WAT	1.3	0.7	4.3	6.3	6.00	6.3	8.3
A13617V INDUCE	50 EC	19.20 0.25 % v/v	SEPT/3 WAT	2.3	3.0	5.0	8.0	7.7	8.0	10.0

Table 2. Percent reduction of creeping bentgrass populations in spring of 2015 following applications on September 9 and 30, 2014.

Treatment	AI GM/L	Rate FL OZA	TIMING	CBG 5/1/2015
A15118B INDUCE	100 EC	4.80 0.25 % v/v	SEPT/3 WAT	72.5 ab
A15118B INDUCE	100 EC	9.60 0.25 % v/v	SEPT/3 WAT	76.5 ab
A15118B A18575F INDUCE	100 EC 200 EC	4.80 5.13 0.25 % v/v	SEPT/3 WAT	7.8 c
UNTREATED CHECK				0.0 c
A15118B A18575F INDUCE	100 EC 200 EC	9.60 5.13 0.25 % v/v	SEPT/3 WAT	56.9 b
A13617V INDUCE	50 EC	9.60 0.25 % v/v	SEPT/3 WAT	60.8 b
A13617V INDUCE	50 EC	19.20 0.25 % v/v	SEPT/3 WAT	90.2 a

